Bulls and Cows Directory in Ethiopia

ADGG
African Dairy Genetic Gains
More productive and profitable dairy cows

ብሔራዊ የእንስሳት ዝርያ ማሻሻያ ኢንስቲትዩት
NAGII
National Animal Genetic Improvement Institute

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better lives through livestock

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Notes from State Minister of the Ministry of Agriculture, Ethiopia

Fikru Regassa

Ethiopia has large cattle population, but milk production is low to fulfil the existing demand for milk and milk products. Efforts to increase milk production and productivity are mainly linked with improvement in the genetics, feed, animal health and husbandry practices. Failure to increase improved genetics is one of the major constraints that is seriously affecting production; the number of crossbred cattle is about 2.34% of the total cattle population. The Ethiopian government and development partners have been supporting smallholder farmers and private sector to transform the dairy sector from subsistence to market-oriented dairy. Progress registered so far is promising but is far behind expectation.

So far, the genetic improvement mainly focused on artificial insemination of indigenous breeds with exotic dairy sires. For the last four decades, the Ministry of Agriculture (MoA) has been providing artificial insemination services by producing and distributing semen from elite bulls, training technicians and producing liquid nitrogen for semen preservation. However, there was no systematic evaluation of progenies of bulls distributed; the genetic makeup of the crossbred cows is in the hands of the farmers. Thus, the genetic progress after many years of crossbreeding still remains a question that has to be answered by researchers.

The initiatives taken by MoA, National Animal Genetic Improvement Institute (NAGII), Natural Resource Institute Finland and International Livestock Research Institute's African Dairy Genetic Gain project to establish and pilot a national dairy animals identification and registration system, establish a national database with all facilities and capture digital data from smallhold-er farmers are basic interventions to improve the dairy sector. In addition, hair samples were collected for genomic analysis to identify the genetic makeup of the crossbred animals managed by farmers and multiplication centres. The capacity to collect hair samples for genomic analysis to identify the genetic makeup of heifers and cows and the genomic data with phenotypic data will speed up genetic improvement in the country. Now, we have reached a level to see the fruits of the efforts made so far in this regard. Phenotypic and genomic data are analyzed, sires/cows are ranked based on their estimat-ed breeding values and top-ranking animals identified and documented in this catalogue. Feedback of the genetic analysis will be provided to owners of the selected bulls so that the farmers or the national genetic improvement program will use the bulls for future genetic improvement. Furthermore, the result will support farmers to make informed decisions either to retain or cull their animals and to value their best heifers and cows to sell at a ruminative price, or use their heifers or cows as collateral to get loans from banks for farm expansion and herd replacement.

The ministry would like to commend NAGII, LUKE and ILRI for the transformative work done so far. However, sustaining the ongoing effort requires a concerted effort of all actors in the dairy value chain, private sector and development partners.

This catalogue is the first of its kind in our country. As we scale up and out the ongoing genetic improvement, such catalogues will be annually published and communicated to dairy cattle actors. It will also be complemented with parades of the best bulls, cows and heifers. The MoA will continue working to realize the objectives of this initiative by scaling up to reach as many smallholder dairy farmers as possible.

Notes from the Director General of ILRI

Jimmy Smith

The International Livestock Research Institute (ILRI) is a CGIAR research centre, a global research partnership for a food-secure future. ILRI works to improve food and nutrition security and reduce poverty in developing countries through research for efficient, safe and sustainable use of livestock. Through its work, ILRI seeks to solve constraints that hinder the growth of livestock production and productivity. ILRI is co-hosted by Kenya and Ethiopia, and has 14 offices across Asia and Africa. ILRI undertakes its research in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations and the private sector.

Livestock are critical to rural incomes, nutrition and food security, and resilience in smallholder mixed crop-livestock and pastoral systems in much of Africa. In most African countries, 60–80% of rural households keep livestock. Organic fertilizer (manure) and animal traction make indirect and critical contributions to crop production. Rapid growth in demand for food of animal origin in Africa, stimulated by high population growth and gains in real per capita income and urbanization, represents a major opportunity to achieve poverty reduction and economic growth, and for making an overall contribution to achieving the Sustainable Development Goals. However, livestock production is constrained by lack of animal feed in adequate amount and quality, limited high producing adaptable genetics, prevalence of animal diseases and climate change.

In Ethiopia, ILRI works with national organizations to achieve the aims of the government's Growth and Transformation Plan and the Ministry of Agriculture's Agricultural Growth Program. These national partners include federal ministries and research institutes, universities, regional state government offices and research institutes, NGOs, the private sector, local communities and their representatives, as well as development projects.

African Dairy Genetic Gains (ADGG) is part of the portfolio in the livestock genetics program working with local and international partners to apply innovative solutions and advanced sciences and technologies to improve genetics. In Ethiopia, the ADGG program is contributing to human and infrastructure capacity development to enable long-term genetic improvement to improve the multiplication and delivery of tropically adapted improved genetics, develop electronic data capture, data analysis and feedback system and demonstrate use of ICT to capture field data and provide extension service, educate farmers, and provide feedback. This animal catalogue is a key output meant to showcase top-ranked bulls and cows that would be used in future genetic improvement to improve farmers animals.

ILRI appreciates the financial support by the Bill and Melinda Gates Foundation for funding the project and the support of the Ministry of Agriculture at national and regional levels, the farmers, and many other partners. ILRI would like to strengthen its partnerships to sustain the program and bring a bigger impact to the transformation of the dairy sector.

Overview and achievements of African Dairy Genetic Gains (ADGG) Project

Okeyo Mwai, ADGG Principal Investigator

Background

Milk production in developing countries, including Ethiopia, is dominated by smallholder dairy farmers, each keeping 1–3 dairy cows. The majority of these farmers are not currently extracting optimum benefits because herd and cow production and productivity levels remain low. Increasing milk production in these countries could be achieved through the following combined interventions: a) identification and promotion of dairy genetics that best matche the prevailing and predicted management conditions; b) improved husbandry, especially feeding, health care and housing; c) timely and customized farmer education and feedback; d) access to good quality inputs, including breeding services at affordable prices, and e) supportive policies that allow enabling institutional frameworks and markets to thrive.

The African Dairy Genetic Gains (ADGG) program (https://africadgg.wordpress.com/category/adgg/) was initiated with a vision for African smallholder dairy farmers to continuously access more productive dairy genetics, breeding, farmer education services and other related input services enabling their farm enterprises to be profitable and competitive businesses. The program objectives are to a) establish performance recording and sampling systems in Tanzania and Ethiopia; b) use the information and samples to develop systems to select crossbred bulls and cows of superior genetic merit for artificial insemination (AI) and natural mating; c) pilot farmer feedback systems that assist farmers to improve their productivity; d) establish public-private, nongovernment organisations and producer partnerships necessary for funding and scaling the on-going ADGG program into a regional platform.

The ADGG program supports Ethiopia's national dairy recording centre (https://portal.adgg.ilri.org/) to operate a digital data capture platform that has enabled more than 70,000 dairy herds and 110,000 animals to be registered and their pedigree and performance data recorded. Genomic information is captured on a sub-set of the animals and all records are appropriately analyzed to generate breeding values (https://portal.adgg.ilri.org/sites/default/files/ADGG_ETH_BULLCOW_ sel_GUIDE_2020.pdf) that are used to rank animals. The very best males are selected to provide semen for Artificial Insemination (AI) through national and regional AI centres in Ethiopia. This way, the genetic variability among and within cattle breeds in Ethiopia are being efficiently exploited, while at the same time a population of resilient yet productive dairy genetics is slowly being built.

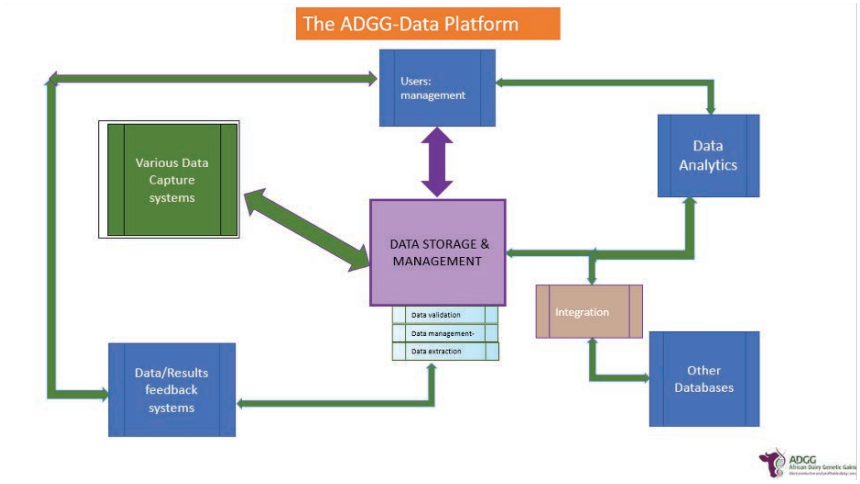
Augmented by a national animal identification system, the results and information gathered over time are used to inform the design and implementation of a structured genetic improvement program at national and regional level. The above have been achieved through innovative applications of Information Communication Technology (ICT) and genomic technology.

ADGG is a farmer and country-focused ILRI-led project funded by the Bill and Melinda Gates Foundation that is being piloted in Ethiopia and Tanzania since 2016, and recently (in 2020) has expanded to Kenya with plans for Uganda and Rwanda underway. In Ethiopia, ADGG is jointly working with the National Animal Genetic Improvement Institute (NAGII) and other domestic and international partners.

In each country, the project routinely captures herd performance records of individual animals, their production environment and genomic information. The data generated is used to identify appropriate dairy genetics, including crossbred bulls of superior genetic merit for increased milk production, fertility, longevity and resilience. The selected bulls are then made available to farmers in the form of semen or breeding bulls for AI or controlled natural mating. Results from performance evaluations and guidance on management practices to improve productivity are relayed back to the livestock producers through simplified SMS messages using the i-cow platform. Information received by farmers guides their adoption of improved cow management practices which will ultimately lead to sustained productivity gains, income, nutrition and poverty reduction.

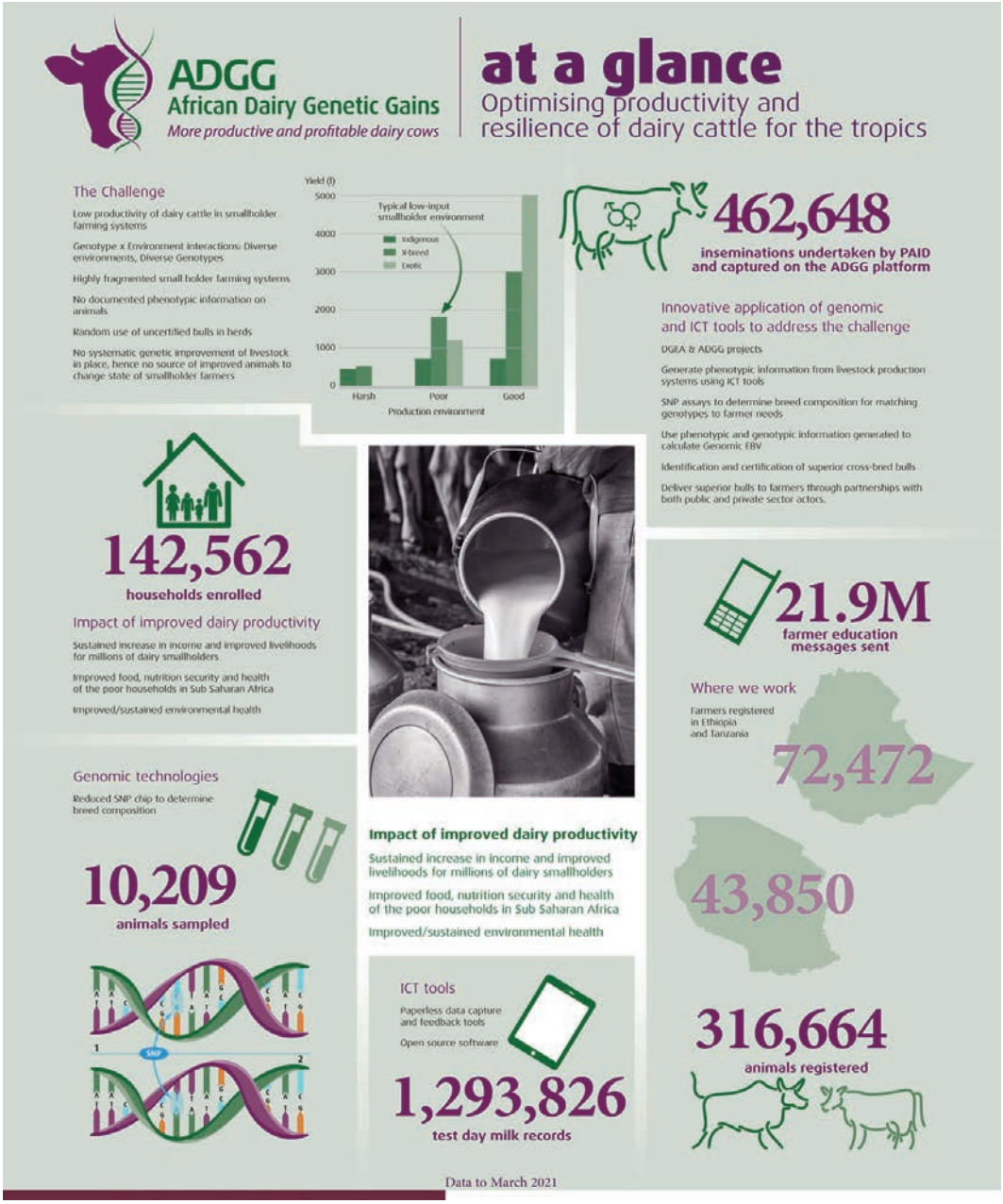
Program achievements in Ethiopia

- ADGG is operating in 98 districts in Amhara, Oromia, SNNP, Sidama (former SNNP region) and Tigray regions, and Addis Ababa city administration.
- Infrastructure has been provided to enable NAGII and regional livestock offices to effectively deliver the genetic improvement plan as follows:
    - High-capacity server (8 TB storage and 256 GB memory), server rack, Smart-UPS RT 20000 XL and air conditioning machine
    - 100 motorbikes, 92 tablets and 15 laptops
    - 25,000 printed plastic ear tags and 200 heart girth measurement tapes
    - Four milk analyzer machines
- A national dairy cattle database with a robust animal identification and registration system has been developed and dairy production data generated through different projects availed in one portal.
- A digital offline data capture system to collect animal performance data from the field has been established. The offline data capture system uses customized ADGG ODK Tools (https://cgspace.cgiar.org/handle/10568/108942). A feedback system using direct SMS has also been developed and is being fine-tuned and adapted for Ethiopia. These products are supported by a robust and agile digital platform, the structure of which is summarized below:



- Ethiopian dairy herds and animals registered by ADGG, PAID and LUKE projects have been harmonized into one national dairy cattle database. The total number of dairy herds, dairy cattle and test day milk records registered in the digital ADGG platform is more than 70,000, 110,000 and 195,000, respectively.
- More than 6,000 animals have been genotyped using medium-density SNP chip, thus enabling artificial insemination bulls to be locally selected by NAGII using state-of-the-art genomic predictions.
- A first round genomic prediction algorithms and systems for selecting crossbred bulls and cows of superior genetic merit for artificial insemination, natural mating and multiplication centres has been deployed.
- Elite animals have been certified and promoted to artificial insemination centres, the top three locally adapted crossbred bulls were transferred to artificial insemination centres for wider national use.

- Farmer feedback systems that assist farmers to improve their productivity have been successfully piloted.
    - Customized feedback messages have been developed and deployed based on performance data collectd from famers' herds.
    - SMS based feedback system (cow calendar) and dairy management support services reaching smallholder dairy farmers through digital extension commenced. A total of 8,897,549 education messages in the form of SMS have been provided to farmers by iCoW in collaboration with ADGG in the last four years.
    - Breed composition of crossbred cows owned by farmers was determined based on the genotype information and shared with farmers to improve herd management in line with the animal's requirement and production potential.
- Human resource capacity building:
    - Capacity of the national system to collect field data, manage, analyze and provide feedback to smallholder farmers has been enhanced.
    - Capacity of 15 Ethiopian scientist in quantitative genetics has been enhanced through training on data management, related statistical analyses and genomic breeding value predictions.
    - The data generated is being used for related research by five MSc and one PhD graduate student within the country.



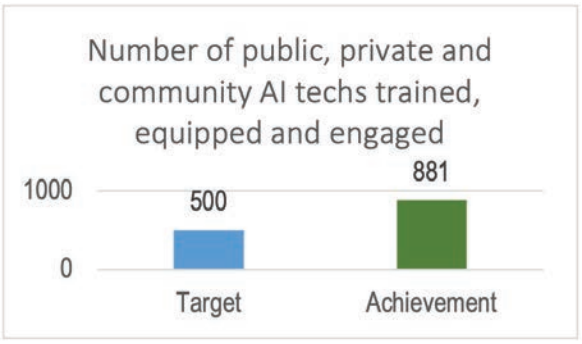
Public Private Partnership for Artificial Insemination Delivery (PAID) Ethiopia: an overview

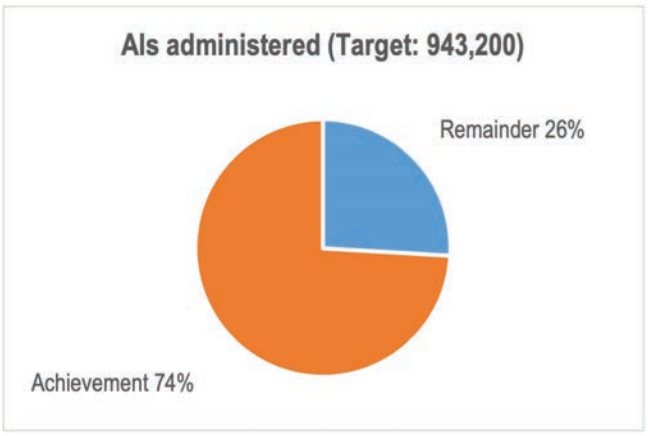
Zelalem Yilma, PAID national coordinator

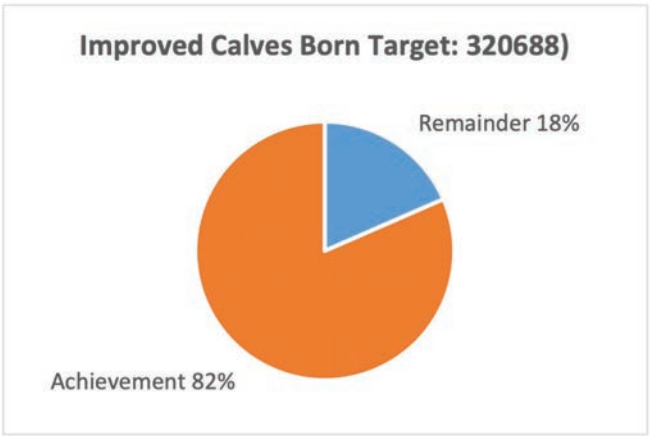
Background

Funded by the Bill and Melinda Gates Foundation and implemented by Land O'Lakes (International Development) Venture37, the Public-Private Partnership for Artificial Insemination Delivery (PAID) is a five-year livestock development project with an additional one year no-cost extension period. The project was designed to address genetic constraints to dairy productivity growth in Amhara, Oromia, SNNP (+ Sidama) and Tigray regions of Ethiopia by strengthening artificial insemination (AI) delivery through public-private partnerships. PAID is also aiming at establishing financially sustainable private channels, as well as more efficient and effective government channels for the delivery of AI and related dairy cattle development services, and stimulating significant private investment leading to the inclusive growth of East Africa's dairy sector.

Venture37, together with the Ethiopian government and selected dairy genetics firms, works collaboratively to achieve PAID's major objectives of: 1) strengthening local capacity for doorstep delivery of reliable AI services; 2) supporting, incentivizing and monitoring the performance of 400 public and 100 private AI service providers who in turn provide training on improved whole dairy farm management to at least 140,500 smallholders and deliver approximately one million AI services and other dairy production inputs and services; and 3) enabling the National Animal Genetic Improvement Institute (NAGII) and Regional Artificial Insemination Centres (AICs) to ramp up their production and distribution of quality frozen semen produced from proven pure and crossbred bulls.







Key achievements:

- AI techs curriculum updated and 200 printed copies transferred to NAGII.
- Farmers' training materials produced. Four manuals, eight video clips, 11 posters and six brochures in three languages (Amharic, Oromiffa and Tigrigna) have been produced and distributed to AI technicians.
- Over 230,000 printed ear tags and 500 ear tag applicators distributed to AI technicians. In addition, five ear tag printers were transferred to NAGII and the four target regional AI centres.
- Computer Assisted Semen Analyzer (CASA) transferred to NAGII.
- Fourteen semen lab and eight LN2 production plant technicians from NAGII and regional AI centres trained.
- First round media campaign on AI technology use conducted.
- First round use of hormones for heat synchronization and AI carried out.

Contributions of the government of Finland and the Natural Resources Institute (Luke) to Ethiopian dairy herd performance recording and national animal evaluation

Enyew Negussie, senior scientist

In 2011 experts from NAGII, MoA and Luke recognized the missing gaps that an institute like NAGII needs to fill to be able to support dairy development in the whole country. It needs to have a system for national animal identification, dairy herd performance recording, selection of superior bulls and dams using modern genetic evaluation methodologies and a facility for data analysis. In addition, it needs to build a strong capacity in animal evaluation methodologies and design of dairy breeding programs.

To address these challenges, a joint project between the Finnish and Ethiopian governments titled "Capacity Building in Herd Performance Recording and Genetic Improvement to Strengthen the Ethiopian Dairy Development" started in 2012. The project was financed by the Institutional Cooperation Instrument of the Ministry of Foreign Affairs of Finland with about 850,000 euros and a substantial Ethiopian contribution both financial and in-kind. The implementation of the project was coordinated by Luke Finland in close cooperation with MoA and NAGII. The main objectives of the project were to: 1) establish a national dairy herd performance recording and advisory system; 2) build a modern computerized database management facility at NAGII; 3) develop locally adapted dairy cattle breeding strategies; and 4) strengthen the human,institutional and organizational capacity of NAGII.

The project in its Phase I (2012–2014) built the Ethiopian national animal identification system and established a national dairy herd performance monitoring scheme on a pilot scale, built a computerized national dairy cattle database centre and supported capacity building for experts and farmers in herd performance recording and advisory systems. A total of 152 herds were first entered into the national herd performance and farmers advisory system.

In Phase II (2015–2017), the national herd performance recording and farmers advisory system, which was started in and around Addis Ababa with 152 herds, scaled up to Tigray and Amhara regions involving a total of 721 herds. It was in this phase that for the first time the national routine dairy genetic evaluation system started utilizing 115,000 test-day milk records from 400 herds and 17,000 animals in the pedigree. A national performance recording system without farmers feedback reporting system cannot be sustained and hence, an automated quarterly and annual farmers feedback reporting system was built simultaneously. The project also trained a total of 1,292 (156 women and 1,136 men) experts, technicians, extension agents, farmers and officials in various fields. The institutional capacity of NAGII and its infrastructures was strengthened with the provision of two small database server computers, several laptops, two Toyota-Hilux field vehicles, several motorcycles, milk compositional analysis equipment and a large supply of printed ear tags.

Towards the end, the Luke-led project ADGG started. The two projects came together, harmonized the various activities and have been working collaboratively ever since to ensure a vital continuation that provided an invaluable foundation for the successful implementation and marked achievements of the ADGG project we are witnessing today. A critical component of any project is to ensure its continuity. In this regard, the capacity building work done by Luke at all levels is designed to ensure the continuation of project achievements. The Finnish government and Luke supported the training of two professionals to get their MSc and a PhD in dairy genetic improvement within the realm of this project to ensure continuity and strengthen the Ethiopian dairy development.

Elite bulls and cows in Ethiopia

Animal ID: ETH000031480
Date of Birth: 10/10/2016
Region: Oromia
District: Guto Gidda
Farm name: Nekemete AI center
Mobile number: +251911979656
gEBV: 104
Reliability: 31%
Breed composition:
African Taurine (12%)
Exotic (88%)

Animal ID: ETH000031481
Date of Birth: 01/01/2017
Region: Oromia
District: Guto Gidda
Farm name: Nekemete AI center
Mobile number: +251911979656
gEBV: 103
Reliability: 35%
Breed composition:
African Taurine (7%)
Exotic (93%)

Animal ID: ETH000009717
Date of Birth: 12/5/2016
Region: Oromia
District: Adama
Farmer name: Mola Erkyehun
Mobile number: +251911157969
gEBV: 103
Reliability: 25%
Breed composition:
Indigenous Zebu (13%)
African Taurine (39%)
Exotic (48%)

Animal ID: ETH000006776
Date of Birth: 28/11/2015
Region: Oromia
District: Welmera
Farmer name: Serkalem Abebe
Mobile number: +251912630303
gEBV: 104
Reliability: 55%
Breed composition:
Indigenous Zebu (18%)
African Taurine (31%)
Exotic (51%)

Animal ID: ETH000026350
Date of Birth: 12/09/2017
Region: Amhara
District: Debre Markos
Farmer name: Gobeze Bitew
Mobile number: +251911116394
gEBV: 102
Reliability: 51%
Breed composition:
Indigenous Zebu (11%)
African Taurine (19%)
Exotic (70%)

Animal ID: ETH000006593
Date of Birth: 11/08/2012
Region: SNNP
District: Wolayita
Farm name: Sodo Dairy Cattle Breeding Center
Mobile number: +251911575873
gEBV: 122
Reliability: 70%
Breed composition:
Exotic (100%)

Animal ID: ETH000006570
Date of Birth: 12/11/2010
Region: SNNP
District: Wolayita
Farm name: Sodo Dairy Cattle Breeding Center
Mobile number: +251911575873
gEBV: 118
Reliability: 57%
Breed composition:
Exotic (100%)

Animal ID: ETH000006594
Date of Birth: 24/08/2012
Region: SNNP
District: Wolayita
Farm name: Sodo Dairy Cattle Breeding Center
Mobile number: +251911575873
gEBV: 120
Reliability: 57%
Breed composition:
Exotic (100%)

Animal ID: ETH000006596
Date of Birth: 03/09/2012
Region: SNNP
District: Wolayita
Farm name: Sodo Dairy Cattle Breeding Center
Mobile number: +251911575873
gEBV: 119
Reliability: 54%
Breed composition: Exotic (100%)

Animal ID: ETH000006599
Date of Birth: 07/10/2012
Region: SNNP
District: Wolayita
Farm name: Sodo Dairy Cattle Breeding Center
Mobile number: +251911575873
gEBV: 121
Reliability: 54%
Breed composition: Exotic (100%)

Animal ID: ETH000006622
Date of Birth: 27/07/2015
Region: SNNP
District: Wolayita
Farm name: Sodo Dairy Cattle Breeding Center
Mobile number: +251911575873
gEBV: 118
Reliability: 57%
Breed composition:
Exotic (100%)

Animal ID: ETH000006623
Date of Birth: 28/07/2015
Region: SNNP
District: Wolayita
Farm name: Sodo Dairy
Cattle Breeding Center
Mobile number: +251911575873
gEBV: 120
Reliability: 48%
Breed composition:
Exotic (100%)

Animal ID: ETH000006626
Date of Birth: 30/09/2015
Region: SNNP
District: Wolayita
Farm name: Sodo Dairy Cattle Breeding Center
Mobile number: +251911575873
gEBV: 116
Reliability: 36%
Breed composition:
Exotic (100%)

Animal ID: ETH000033893
Date of Birth: 02/09/2014
Region: SNNP
District: Kedida Gamela
Farmer name: Tessema Letemo
Mobile number:+251967809165
gEBV: 116
Reliability: 41%
Breed composition:
Indigenous Zebu (2%)
African Taurine (5%)
Exotic (93%)

Animal ID: ETH000033901
Date of Birth:02/03/2016
Region: SNNP
District: Kedida Gamela
Farmer name: Tessema Letemo
Farmer mobile number: +251967809165
gEBV: 114
Reliability: 47%
Breed composition:
Indigenous Zebu (10%)
African Taurine (13%)
Exotic (77%)

Animal ID: ETH000004737
Date of Birth:15/8/2016
Region: Oromia
District: Ada'a
Farmer name: GGK cattle breeding
Mobile number: +251949801510
gEBV: 111
Reliability: 33%
Breed composition:
Exotic (>87.5)

Animal ID: ETH000008265
Date of Birth: 23/5/2015
Region: Oromia
District: Debre Libanos
Farmer name: Tsige dairy farm
Mobile number: +251922739276
gEBV: 113
Reliability: 54%
Breed composition:
Indigenous Zebu (2%)
African Taurine (5%)
Exotic (93%)

Animal ID: ETH000038459
Date of Birth:23/12/2016
Region: Oromia
District: Sebeta Hawas
Farmer name: Ararsa Gameda
Mobile number:+251911459659
gEBV: 111
Reliability: 54%
Breed composition:
African Taurine (10%)
Exotic (90%)

Animal ID: ETH000014358
Date of Birth:30/5/2009
Region: Oromia
District: Gedeb Asasa
Farm name: Aredayeta ATVET college
Mobile number: +251975822189
gEBV: 114
Reliability: 64%
Breed composition:
Indigenous Zebu (5%)
African Taurine (11%)
Exotic (84%)

Animal ID: ETH000444421
Date of Birth: 5/7/2017
Region: Oromia
District: Welmera
Farmer name: Burtukaan Biruu
Mobile number: +251932345892
gEBV: 110
Reliability: 62%
Breed composition:
Indigenous Zebu (16%)
African Taurine (7%)
Exotic (77%)

Animal ID: ETH000444439
Date of Birth: 11/07/2017
Region: Oromia
District: Welmera
Farmer name: Burtukaan Biruu
Mobile number: +251932345892
gEBV: 112
Reliability: 61%
Breed composition:
Exotic (100%)

Animal ID: ETH000439150
Date of Birth: 14/07/2015
Region: Oromia
District: Tiyo
Farmer name: Kedir Husen
Mobile number:+251913938347
gEBV: 110
Reliability: 56%
Breed composition:
Indigenous Zebu (3%)
Exotic (97%)

Animal ID: ETH000006714
Date of Birth: 10/9/2014
Region: Oromia
District: Welmera
Farmer name: Serkalem Abebe
Mobile number: +251912630303
gEBV: 111
Reliability: 38%
Breed composition:
Indigenous Zebu (5%)
African Taurine (17%)
Exotic (77%)

The Addis Livestock Production and Productivity Improvement Service (ALPPIS) PLC, established in 2009, is still the first of its kind and the only practical model that took a risk in deciding to work differently on AI service delivery that the government is providing for free.

For the farmers who need cows that produce more milk and meat, ALPPIS is contributing by importing and distributing high quality bull semen from USA, Europe and Israel. Most imported semen are of Frisian and Jersey breeds. ALPPIS has also imported semen of other breeds from other sources depending on requests coming from clients, especially research and higher learning institutions in the country.

Most semen distributed and inseminations performed are on dairy potential areas in and around major cities of the country. The delivery of AI service in the regions is performed by partnering with locally existing government and private AI technicians willing to benefit by working with ALPPIS and the farmers interested to use semen from ALPPIS.
Sexed semen which was introduced to the market by ALPPIS in 2014 is offering dairy producers another powerful genetic management option creating value in their dairy business. The use of sexed semen in Ethiopia is increasing. The goal with sexed semen is to produce calfs of a specific sex, mainly to obtain more heifer calves for milk production.

The training and advisory services provided by ALPPIS focus more on semen handling, heat detection and time of insemination, reproductive health management, record keeping, reporting and performance evaluation of activities. Many farmers have realized the difference in the quality of services provided and are willing to pay for the services rendered.

The Ministry of Agriculture, NAGII, federal and regional research centres and many higher learning institutions are among the users of semen from ALPPIS. Based on available data and information from farmers, the calves born are of bigger size (26–32 kg at birth), heifers reach puberty earlier and is ready to be bred at the age of 14–16 months and milk yield is between 20–38 litres per day depending on lactation period and management level of the farms.

Project Mercy
starts with the one.

Project Mercy is a US-based 501(c)(3) not for profit organization operating in Ethiopia. The organization has implemented successful rural community development programs in Ethiopia over the past 28 years. Chief among the programs being executed is research, development and implementation of a dairy cattle breeding system that enhances the production and productivity of selected Ethiopian indigenous cattle by crossbreeding with Jersey breed.

The objective of Project Mercy is to liberate families in rural communities from poverty through education, health, nutrition, vocation and infrastructure development. The year 2021 marks the 44th year of operation for the organization. Started as a refugee relief organization to help Africans that were displaced by political instability and strife during the turbulent late-1970s, Project Mercy has evolved into a premier organization with a unique and holistic model for rural community development.

Angolallana Tera Woreda in North Shewa Zone of the Amhara Regional State is where the breed improvement initiative is underway. Project Mercy hopes to increase milk served to children and income earned by families. The two approaches being taken to meet these objectives are:

- distributing Jersey crossbred heifers from the breeding centre to the smallholder families; and
- offering extension services to the farmers so that they have immediate and full access to knowledge, Jersey genetics and support through a network of services delivered by field agents, community AI technicians and breeding bull stations.

For more information, please contact us at: projectmercyeth@gmail.com

The National Animal Health Diagnostic and Investigation Center (NAHDIC) started its journey as the Central Disease Investigation Laboratory (CDIL) in 1995 at Sebeta. Over the past 25 years, NAHDIC improved on quality and reliability of its diagnostic services, by applying quality management systems and complying with the international quality standards ISO 17025: 2005 since 2008. During this period, NAHDIC was selected from the sub-region as the East African reference laboratory for avian influenza and Newcastle disease, and for its excellent competence in generating valid laboratory test services. Currently, NAHDIC is working towards being recognized as the centre of excellence for animal disease diagnosis, training and research work. NAHDIC is above all now applying for OIE reference laboratory for Foot and Mouth Disease and FAO reference centre for Corona viruses.

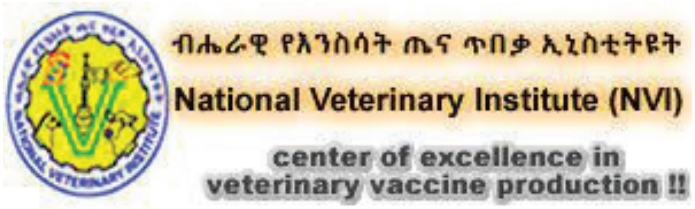
NAHDIC has one BSL-3 Laboratory facility for the diagnosis of zoonotic disease such as Avian Influenza, bovine Tuberculosis, Anthrax, Brucellosis, Foot-and-Mouth Disease, Rabies, Rift Valley fever, Middle East coronavirus, Ebola, and even the current pandemic COVID-19 having a great public health importance. Currently, the centre is at its maximum capacity with a next Seq 550 and third generation Nanopore, sequencer platform and corresponding bioinformatics to enhance its diagnostic and research capacity for differentiation of emerging and re-emerging animal pathogens in Africa. NAHDIC has been implementinglaboratory information management system (LIMS) that allows effective management of samples and associated data.

NAHDIC signed an agreement with the National Animal Genetic Improvement Institute (NAGII) for collaboration on different activities such as expert advice and diagnostic certification and training on reproductive health management. Based on this agreement, NAHDIC currently supports NAGII and regional artificial insemination stations in diagnosis and research on Brucellosis, Bovine viral Diarrhea (BVD), Infectious Bovine Rhinotracheitis (IBR), Bovine Tuberculosis (BTB), leptospirosis, vibriosis and trichomoniasis to support genetic improvement of dairy cattle.

Ethiopian Milk Processors Industry Association

Ethiopian Milk Processors Industry Association (EMPIA) is a member of Ethiopian Chamber of Commerce and Sectoral Association. The association's core objectives include: providing different services to members, safeguarding the overall rights and benefits of its members, representing members at international and national forums, serving as a bridge between the business community and the government and serving smallholder dairy farmers and commercial farms as a reliable market outlet.

The association supports and encourages its members to process quality dairy products and supply to urban markets at competitive prices. The processing plants in the country run at less than 50% of their installed capacities, showing more work needs to be done to increase dairy productivity and supply of quality fresh milk to the market. EMPIA will work with producers' cooperatives and other producer organisation in order to make the dairy market in ethiopia efficient and competitive.



The National Veterinary Institute (NVI) was established at Debrezeit/Bishoftu in 1964 with 40 persons under the Ministry of Agriculture, getting technical assistance from the French government through the French Veterinary Mission in Ethiopia.

Today, it is one of the most well known veterinary vaccine producing institutions in Africa with its multidisciplinary professional staff having long years of experience. The infrastructure of NVI is well developed and playing an important role in the attraction of international institutions such as the Pan African Veterinary Vaccine Control Center (PANVAC), which is under the African Union.

The National Veterinary Institute was organized as a public enterprise by Proclamation No. 25/1992 and Council of Ministers Regulations No. 52/1999.

The institute is:

- Certified for ISO 9001 - 2015 Quality Management System (QMS) by an international accrediting company DQS/QNET and it is dedicated for manufacturing and marketing of veterinary vaccines as its primary mandate.
- Certified by the Ethiopian National Accreditation Offce/ENAO/ for ISO/IEC 17025:2017 in Research and Development Laboratory for the following tests:
    - 3ABC ELISA for FMD
    - C-ELISA For CBPP & CCPP
    - RBPT FOR BRUCELLOSIS and
    - ELISA Test for PPR

The institute has more than 57 years of experience in the production and distribution of veterinary biological products for both domestic and international markets for more than 26 African countries. The vaccine production capacity of the institute in the early years was about four million doses per year, but currently it has a capacity of producing more than 300,000,000 doses and 23 different types of veterinary vaccines. The institute has been working in collaboration with national and international institutes on vaccine development and improvement, vaccine production, pathogen identification and characterisation, and other related technology transfer activities.

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Building Rural Income Through Inclusive Dairy Business Growth in Ethiopia (BRIDGE)

The BRIDGE project is a five-year (2019–2023) Dutch-funded dairy development project aimed at improving the performance of the dairy sector in Ethiopia. The project is implemented jointly by SNV Netherlands Development Organization and the Wageningen University and Research.

The project supports 85,000 smallholders who own crossbred animals in five different geographical clusters across the country by strengthening the performance of the government extension system. Through more systemic interventions, such as value chain and market development, the project reaches all dairy producers in the clusters. Attention is also given to working with emerging specialized and commercial dairy farmers across the country through better services, private extension and improved input supplies through the establishment of dairy hubs. The improved consumption of milk and benefits to child growth and health is monitored.

The main outcomes of the project are:

- Improved milk production
    - Improved adoption of good farming practices
    - Improved milk collection, processing, and marketing
    - Improved volume and quality (safety) of milk collected
    - Increased milk volume processed into affordable, accessible and nutritious products
- Improved nutrition
    - Improved awareness among dairy farmers of the consumption of nutritious foods and safe dairy products
    - Increased consumption of dairy products in urban areas
- Improved enabling environment
    - Improved dairy sector coordination
    - Knowledge institutes promote nutrition-sensitive dairy production

For more information, contact the project management: rvanklinken@snv.org or jan.vanderlee@wur.nl

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Centre for Tropical Livestock Genetics and Health

Dairy Farmers & Farmer organizations

AABA

NAGRC & DB

ABEA

ECI-Africa

KALRO

LAND O'LAKES, INC. INTERNATIONAL DEVELOPMENT

Ministry of Agriculture, Livestock, Fisheries and Irrigation — Livestock Recording Centre (LRC)

National/regional Institutions/govts.

FARM INK

une University of New England

KSB DRSK

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SRUC

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

The International Livestock Research Institute (ILRI) works to improve food security and reduce poverty in developing countries through research for better and more sustainable use of livestock. ILRI is a member of the CGIAR Consortium, a global research partnership of 15 centres working with many partners for a food-secure future. ILRI has two main campuses in East Africa and other hubs in East, West and Southern Africa and South, Southeast and East Asia. ilri.org

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